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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,015	08/27/2001	Bala Subramaniam	318888	3706

7590 12/11/2003  
HOVEY, WILLIAMS, TIMMONS & COLLINS  
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Kansas City, MO 64108

EXAMINER

DANG, THUAN D

ART UNIT PAPER NUMBER

1764

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

### Office Action Summary

**Application No.**

09/940,015

**Applicant(s)**

SUBRAMANIAM ET AL.

**Examiner**

Thuan D. Dang

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 September 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 9-20 and 25-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 9-20, 25-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_                      6) ☐ Other:

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election without traverse of claims 1-4, 9-20, and 25-31, in Paper No. 5 and alkylation in the telephone conversation of 6/9/03 is acknowledged.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 2, 4, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subramaniam et al (5,907,075).

Subramaniam discloses an alkylation process in the presence of a solid catalyst having a surface area of from 5-1000 m<sup>2</sup>/g under supercritical conditions at a temperature of from about 0.9-1.3 Tc.

Subramaniam is silent as to the pore size of the catalyst (see the entire patent for details). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Subramaniam process by selecting an appropriate pore size for the catalyst since it is expected that the Subramaniam catalyst having any pore size would yield similar results.

The examiner notes that at the first time when the reactants are fed to the reactor, the reaction mixture is the reactant mixture since at that time, the product is not produced yet.

Subramaniam does not disclose employing a pressure as called for in claims 11 and 12. However, Subramaniam discloses that the pressure exceeds the critical pressure (col. 2, lines 13-14).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Subramaniam process by selecting a pressure higher than the critical pressure to arrive at the applicants' claimed pressure.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Subramaniam et al (5,907,075) in view of McClure et al (4,056,578).

Subramaniam discloses a process as discussed above.

Subramaniam does not disclose using a catalyst as called for in claim 3. However, McClure discloses a similar catalyst for alkylation of paraffins with olefins (the abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Subramaniam process by employing the McClure catalyst since the McClure's catalyst is superior to other solid catalysts (col. 5, lines 20-27).

Claims 13-18, 20, and 25-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Subramaniam et al (5,907,075) in view of Angstadt et al (5,491,278).

Subramaniam discloses a process as discussed above.

Subramaniam does not disclose regenerating the catalyst by periodically terminating at least one of the reactants, elevating the pressure and/or lowering the temperature (see the entire patent for details).

However, Angstadt discloses a similar process during which the olefin feed is alternatively stopped and started to remove the potential coke-forming moieties (the abstract; col. 6, lines 12-16).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Subramaniam by the method of Angstadt by stopping and starting the olefin feed to flush the coke-forming moieties on the Subramaniam catalyst to increase the life of the catalyst.

Angstadt does not disclose increasing the pressure and/or lowering the temperature within the reactor during the stop of the olefin feed (see the entire patent for details).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Subramaniam by selecting appropriate temperature or pressure for this period to optimize this period of reaction which is different from the period both reactants reacting in the reactor. Further, it is expected that using any temperature or pressure at this period would yield similar results.

Claims 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Subramaniam et al (5,907,075) in view of Angstadt et al (5,491,278) further in view of McClure (4,056,578).

Subramaniam discloses a process as discussed above.

Subramaniam does not disclose using a catalyst as called for in claim 19. However, McClure discloses a similar catalyst for alkylation of paraffins with olefins (the abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Subramaniam process by employing the McClure catalyst since the McClure's catalyst is superior to other solid catalysts (col. 5, lines 20-27).

#### ***Response to Arguments***

Applicant's arguments filed on 9/12/2003 have been fully considered but they are not persuasive.

The argument that while the applicant's claimed supercritical condition relative to the reactant mixture, the same of the prior art is relative to the reaction mixture is not persuasive

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since as discussed above, at the first time when the reactants are fed to the reactor, the reaction mixture is the reactant mixture since at that time, the product is not produced yet. Further, as disclosed on page 6, lines 7-19, applicants admitted that the reaction condition of the claimed process is similar to the condition of the applied prior art.

The argument that claim 1 has been amended to recite the use of a macroporous solid catalyst is not persuasive since as discussed above, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Subramaniam process by selecting an appropriate pore size for the catalyst since it is expected that the Subramaniam catalyst having any pore size would yield similar results.

The argument that Angstadt teaches the opposite of what is claimed in claim 16 is not persuasive since as admitted by the examiner above, Angstadt does not disclose the pressure and the temperature during the stop of the olefin feed to regenerate the catalyst. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Subramaniam by selecting appropriate temperature or pressure for this period to optimize this period of reaction which is different from the period both reactants reacting in the reactor. Further, it is expected that using any temperature or pressure at this period would yield similar results.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thuan D. Dang whose telephone number is 703-305-2658. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 703-308-6824. The fax phone number for the organization where this application or proceeding is assigned is 703-305-5408.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Thuan D. Dang  
Primary Examiner  
Art Unit 1764

92940015.2<sup>nd</sup>  
December 5, 2003

A handwritten signature in black ink, appearing to be 'Thuan D. Dang', written over a horizontal line.